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## MAIN REQUEST

### Claims

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1. A refrigerant composition which comprises:

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(i) pentafluoroethane, 1,1,1,2- or 1,1,2,2-tetrafluoroethane, 1,1-difluoroethane; trifluoromethoxypentafluoroethane, 1,1,1,2,3,3-heptafluoropropane or 1,1,1,2,2,3,3-heptafluoropropane, or a mixture of two or more thereof, in an amount from 30 to 50% by weight based on the weight of the composition  
(ii) an unsubstituted hydrocarbon of the formula  $C_nH_m$  in which n is at least 4 and m is at least 2n-2, other than methyl propane, in an amount from 1 to 4% by weight based on the weight of the composition.

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with the remainder, not exceeding 60% by weight based on the weight of the composition, being:

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(iii) pentafluoroethane, trifluoromethoxydifluoromethane or hexafluorocyclopropane, or a mixture of two or more thereof.

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2. A composition according to claim 1 wherein component (i) is present in an amount of 50% by weight based on the weight of the composition.

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3. A composition according to claim 1 or 2 wherein component (i) is 1,1,1,2-tetrafluoroethane or a mixture of said ethane with pentafluoroethane.

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4. A refrigerant composition which comprises:

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(i) pentafluoroethane, 1,1,1,2- or 1,1,2,2-tetrafluoroethane, 1,1-difluoroethane, trifluoromethoxypentafluoroethane, 1,1,1,2,3,3-heptafluoropropane or 1,1,1,2,2,3,3-heptafluoropropane, or a mixture of two or more thereof, in an amount from 50 to 75% by weight based on the weight of the composition

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(ii) an unsubstituted hydrocarbon of the formula  $C_nH_m$  in which n is at least 4 and m is at least 2n-2, other than methyl propane, in an amount from 1 to 4% by weight based on the weight of the composition; with the remainder being

(iii) pentafluoroethane, trifluoromethoxydifluoromethane or hexafluorocyclopropane, or a mixture of two or more thereof.

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5. A composition according to claim 4 wherein component (i) is 1,1,1,2-tetrafluoroethane or a mixture of said ethane with pentafluoroethane.

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6. A composition according to claim 4 or 5 wherein component (iii) is pentafluoroethane.

### 7. A refrigerant composition which comprises:

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(i) 1,1,1,2- or 1,1,2,2-tetrafluoroethane, or a mixture of pentafluoroethane and 1,1,1,2- or 1,1,2,2-tetrafluoroethane, in an amount from 30 to 94% by weight based on the weight of the composition,

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(ii) an unsubstituted hydrocarbon of the formula  $C_nH_m$  in which n is at least 4 and m is at least 2n-2, other than methyl propane, in an amount from 1 to 4% by weight based on the weight of the composition,

(iii) pentafluoroethane in an amount from 5 to 60% by weight based on the weight of the composition with the proviso that the concentration of pentafluoroethane in the composition is not 5 to 20% by weight based on

~~the weight of the composition.~~

- ~~7~~ 6. A composition according to any one of the preceding claims wherein component (ii) is present in an amount from 2 to 4% by weight based on the weight of the composition.
- ~~5~~ ~~8~~ 8. A composition according to claim ~~8~~ wherein component (ii) is present in an amount from 3 to 4% by weight based on the weight of the composition.
- ~~10~~ 10. A composition according to any one of the preceding claims wherein component (ii) is a mixture of said hydrocarbons.
- ~~10~~ 11. A composition according to any one of the preceding claims wherein component (ii) comprises a hydrocarbon which possesses 4 or 5 carbon atoms.
- ~~11~~ 12. A composition according to claim ~~11~~ wherein component (ii) comprises a hydrocarbon which is n-butane.
- ~~12~~ 12. A composition according to claim ~~12~~ which comprises:
- ~~20~~ (a) 46 to 46.5% by weight of pentafluoroethane  
 (b) 50 % by weight of 1,1,1,2-tetrafluoroethane and  
 (c) 4 to 3.5% by weight, respectively, of n-butane.
- ~~13~~ 13. Use as a refrigerant of a composition as claimed in any one of claims 1 to ~~10~~.
- ~~14~~ 14. Use according to claim ~~14~~ in a refrigeration or airconditioning system designed to use chlorodifluoromethane as refrigerant.
- ~~16~~ 16. Use of a refrigeration composition which comprises:
- ~~30~~ (i) pentafluoroethane, 1,1,1,2- or 1,1,2,2-tetrafluoroethane, 1,1-difluoroethane, 1,1,1,2,3,3,3-heptafluoropropane or 1,1,1,2,2,3,3-heptafluoropropane, or a mixture of two or more thereof, in an amount from 30 to 94% by weight based on the weight of the composition and  
 (ii) an unsubstituted hydrocarbon of the formula  $C_nH_m$  in which n is at least 4 and m is at least 2n-2, other than methyl propane, in an amount from 1 to 10% by weight based on the weight of the composition, as a replacement for chlorodifluoromethane.  
 (iii) pentafluoroethane in an amount from 5 to 60% by weight based on the weight of the composition, as a replacement for chlorodifluoromethane.
- ~~35~~ 17. Use according to claim ~~16~~ wherein the composition is as defined in claim 13.
- ~~40~~ 15. 18. The process for producing refrigeration which comprises evaporating a composition as claimed in any one of claims 1 to ~~15~~ in the vicinity of a body to be cooled.
- ~~12~~ 16. 19. A refrigeration apparatus containing, as refrigerant, a composition as claimed in any one of claims 1 to ~~18~~.
- ~~45~~ 17. 20. A refrigeration apparatus according to claim ~~18~~ which is designed to use chlorodifluoromethane as refrigerant.

**MAIN REQUEST**

## Claims

5      1.      A refrigerant composition which comprises:

(i) pentafluoroethane, 1,1,1,2- or 1,1,2,2-tetrafluoroethane, 1,1-difluoroethane, trifluoromethoxypentafluoroethane, 1,1,1,2,3,3,3-heptafluoropropane or 1,1,1,2,2,3,3-heptafluoropropane, or a mixture of two or more thereof, in an amount from 30 to 50% by weight based on the weight of the composition,

10        (ii) an unsubstituted hydrocarbon of the formula  $C_nH_m$  in which n is at least 4 and m is at least 2n-2, other than methyl propane, in an amount from 1 to 4% by weight based on the weight of the composition,

with the remainder, not exceeding 60% by weight based on the weight of the composition, being:

15        (iii) pentafluoroethane, trifluoromethoxydifluoromethane or hexafluorocyclopropane, or a mixture of two or more thereof.

2.      A composition according to claim 1 wherein component (i) is present in an amount of 50% by weight based on the weight of the composition.

20      3.      A composition according to claim 1 or 2 wherein component (i) is 1,1,1,2-tetrafluoroethane or a mixture of said ethane with pentafluoroethane.

4.      A refrigerant composition which comprises:

25        (i) pentafluoroethane, 1,1,1,2- or 1,1,2,2-tetrafluoroethane, 1,1-difluoroethane, trifluoromethoxypentafluoroethane, 1,1,1,2,3,3,3-heptafluoropropane or 1,1,1,2,2,3,3-heptafluoropropane, or a mixture of two or more thereof, in an amount from 50 to 75% by weight based on the weight of the composition,

30        (ii) an unsubstituted hydrocarbon of the formula  $C_nH_m$  in which n is at least 4 and m is at least 2n-2, other than methyl propane, in an amount from 1 to 4% by weight based

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on the weight of the composition,

with the remainder being:

(iii) pentafluoroethane, trifluoromethoxydifluoromethane or hexafluorocyclopropane, or a mixture of two or more thereof.

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5. A composition according to claim 4 wherein component (i) is 1,1,1,2-tetrafluoroethane or a mixture of said ethane with pentafluoroethane.

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6. A composition according to claim 4 or 5 wherein component (iii) is pentafluoroethane.

7. A composition according to any one of the preceding claims wherein component (ii) is present in an amount from 2 to 4% by weight based on the weight of the composition.

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8. A composition according to claim 7 wherein component (ii) is present in an amount from 15 3 to 4% by weight based on the weight of the composition.

9. A composition according to any one of the preceding claims wherein component (ii) is a mixture of said hydrocarbons.

20 10. A composition according to any one of the preceding claims wherein component (ii) comprises a hydrocarbon which possesses 4 or 5 carbon atoms.

11. A composition according to claim 10 wherein component (ii) comprises a hydrocarbon which is n-butane.

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12. A composition according to claim 11 which comprises:

- (a) 46 to 46.5% by weight of pentafluoroethane,
- (b) 50% by weight of 1,1,1,2-tetrafluoroethane and
- (c) 4 to 3.5% by weight, respectively, of n-butane.

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13. Use as a refrigerant of a composition as claimed in any one of claims 1 to 12.
14. Use according to claim 13 in a refrigeration or airconditioning system designed to use chlorodifluoromethane as refrigerant.  
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15. The process for producing refrigeration which comprises evaporating a composition as claimed in any one of claims 1 to 12 in the vicinity of a body to be cooled.
16. A refrigeration apparatus containing, as refrigerant, a composition as claimed in any one  
10 of claims 1 to 12.
17. A refrigeration apparatus according to claim 16 which is designed to use chlorodifluoromethane as refrigerant.